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Advanced Algorithms

3.1

1. In the lesson there is a defined equation of n + lg(n) -2 that represents the total comparisons to find largest and second largest.

We must find that from 128 teams

=> 128 + lg(128) – 2 = 126 + 7 = 133 Total games to find the best and second-best teams.

2. In order to find the third best team, that team must have lost to either the winner or the other finalist. You need n-1 comparisons to find the largest, lg(n)-1 to find the second-best. I would assume you then need 2\*(lg(n) -1) because you need to compare all of the teams that lost to both finalists. Therefore to find the third-best team you would need at least n + 3lg(n) -3 comparisons.

3. In order to award three medals of 128 teams you need 128 + 21 -2 = 147 Total Games.

4. My algorithm may be optimal as far as an algorithm can get because for either finalist you need lg(n)-1 games. However, in real life I would just have the two teams that lost in the semi-finals (the round where there are 4 teams left) go and play each other